





Q.P Code: CS3103PC

Hall Ticket No.

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**NARSIMHAREDDY ENGINEERING COLLEGE**  
(UGC AUTONOMOUS)

III B.Tech I Semester (NR21) Supplementary Examination, June 2025

**COMPUTER NETWORKS**  
(Computer Science and Engineering)

Time : 3 hours

Maximum marks: 70

- Note:**
- This question paper contains two parts, A and B
  - Part A is compulsory which carries 20 marks (10 sub questions are two from each unit carry 2 Marks). Answer all questions in Part A
  - Part B Consists of 5 Units. Answer one question from each unit. Each question carries 10 Marks and may have a, b sub questions

**Part-A**  
Answer all questions (20 Marks)

| Q.No | Question                                           | M | CO  | BL |
|------|----------------------------------------------------|---|-----|----|
| 1)   | a. What is encapsulation?                          | 2 | CO1 | L1 |
|      | b. Define LAN                                      | 2 | CO1 | L1 |
|      | c. What are the functions of LLC?                  | 2 | CO2 | L1 |
|      | d. What is a virtual circuit network?              | 2 | CO2 | L1 |
|      | e. Define flooding                                 | 2 | CO3 | L1 |
|      | f. What are the metrics used by routing protocols? | 2 | CO3 | L2 |
|      | g. What is meant by segment?                       | 2 | CO4 | L1 |
|      | h. Define TCP                                      | 2 | CO4 | L1 |
|      | i. What is the purpose of Domain Name System?      | 2 | CO5 | L1 |
|      | j. Define HTTP                                     | 2 | CO5 | L1 |

**Part-B**  
Answer all the Units (50 Marks)  
All Questions carry equal Marks

| Q.             | Question                                                                         | M | CO  | BL |
|----------------|----------------------------------------------------------------------------------|---|-----|----|
| <b>UNIT-I</b>  |                                                                                  |   |     |    |
| 2)             | a. Explain about wireless transmission                                           | 5 | CO1 | L3 |
|                | b. Write about twisted pair cable and coaxial cable                              | 5 | CO1 | L2 |
| <b>OR</b>      |                                                                                  |   |     |    |
| 3)             | a. Explain about various transmission media in physical layer with a neat sketch | 5 | CO1 | L3 |
|                | b. Discuss about Internet standards                                              | 5 | CO1 | L2 |
| <b>UNIT-II</b> |                                                                                  |   |     |    |
| 4)             | a. Explain about Error detection and Error Correction.                           | 5 | CO2 | L3 |
|                | b. Mention the types of errors and explain each type                             | 5 | CO2 | L2 |
| <b>OR</b>      |                                                                                  |   |     |    |
| 5)             | a. Explain Hamming Code in Error Correction                                      | 5 | CO2 | L3 |
|                | b. Explain CSMA/CD and CSMA/CA in detail                                         | 5 | CO2 | L2 |

|                 |                                                                               |   |     |    |
|-----------------|-------------------------------------------------------------------------------|---|-----|----|
| <b>UNIT-III</b> |                                                                               |   |     |    |
| 6)              | a. Explain store and forward packet switching.                                | 5 | CO3 | L3 |
|                 | b. Difference between Broadcasting and Multi casting.                         | 5 | CO3 | L2 |
| <b>OR</b>       |                                                                               |   |     |    |
| 7)              | a. Explain token bucket algorithm with neat diagram.                          | 5 | CO3 | L3 |
|                 | b. Explain different types of routing algorithms                              | 5 | CO3 | L3 |
| <b>UNIT-IV</b>  |                                                                               |   |     |    |
| 8)              | a. Enumerate the mechanism of three-way handshake protocol for TCP.           | 5 | CO4 | L4 |
|                 | b. Explain the function of TCP/IP protocol.                                   | 5 | CO4 | L3 |
| <b>OR</b>       |                                                                               |   |     |    |
| 9)              | a. Explain about elements of transport protocols.                             | 5 | CO4 | L3 |
|                 | b. Show the different approaches in Packet Switching. Explain them in detail. | 5 | CO4 | L2 |
| <b>UNIT-V</b>   |                                                                               |   |     |    |
| 10)             | a. Explain in detail about function and structure of e-mail protocol.         | 5 | CO5 | L3 |
|                 | b. Write briefly about World wide web.                                        | 5 | CO5 | L2 |
| <b>OR</b>       |                                                                               |   |     |    |
| 11)             | a. Explain about Application layer and its services in detail?                | 5 | CO5 | L3 |
|                 | b. Explain the working of Electronic mail.                                    | 5 | CO5 | L2 |

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**NARSIMHAREDDY ENGINEERING COLLEGE**  
(UGC AUTONOMOUS)

III B.Tech I Semester (NR21) Supplementary Examination, June 2025

**COMPUTER NETWORKS**  
(Computer Science and Engineering)

Time : 3 hours

Maximum marks: 70

- Note:**
- This question paper contains two parts, A and B
  - Part A is compulsory which carries 20 marks (10 sub questions are two from each unit carry 2 Marks). Answer all questions in Part A
  - Part B Consists of 5 Units. Answer one question from each unit. Each question carries 10 Marks and may have a, b sub questions

**Part-A**  
Answer all questions (20 Marks)

| Q.No | Question                                           | M | CO  | BL |
|------|----------------------------------------------------|---|-----|----|
| 1)   | a. What is encapsulation?                          | 2 | CO1 | L1 |
|      | b. Define LAN                                      | 2 | CO1 | L1 |
|      | c. What are the functions of LLC?                  | 2 | CO2 | L1 |
|      | d. What is a virtual circuit network?              | 2 | CO2 | L1 |
|      | e. Define flooding                                 | 2 | CO3 | L1 |
|      | f. What are the metrics used by routing protocols? | 2 | CO3 | L2 |
|      | g. What is meant by segment?                       | 2 | CO4 | L1 |
|      | h. Define TCP                                      | 2 | CO4 | L1 |
|      | i. What is the purpose of Domain Name System?      | 2 | CO5 | L1 |
|      | j. Define HTTP                                     | 2 | CO5 | L1 |

**Part-B**  
Answer all the Units (50 Marks)  
All Questions carry equal Marks

| Q.             | Question                                                                         | M | CO  | BL |
|----------------|----------------------------------------------------------------------------------|---|-----|----|
| <b>UNIT-I</b>  |                                                                                  |   |     |    |
| 2)             | a. Explain about wireless transmission                                           | 5 | CO1 | L3 |
|                | b. Write about twisted pair cable and coaxial cable                              | 5 | CO1 | L2 |
| <b>OR</b>      |                                                                                  |   |     |    |
| 3)             | a. Explain about various transmission media in physical layer with a neat sketch | 5 | CO1 | L3 |
|                | b. Discuss about Internet standards                                              | 5 | CO1 | L2 |
| <b>UNIT-II</b> |                                                                                  |   |     |    |
| 4)             | a. Explain about Error detection and Error Correction.                           | 5 | CO2 | L3 |
|                | b. Mention the types of errors and explain each type                             | 5 | CO2 | L2 |
| <b>OR</b>      |                                                                                  |   |     |    |
| 5)             | a. Explain Hamming Code in Error Correction                                      | 5 | CO2 | L3 |
|                | b. Explain CSMA/CD and CSMA/CA in detail                                         | 5 | CO2 | L2 |

|                 |                                                                               |   |     |    |
|-----------------|-------------------------------------------------------------------------------|---|-----|----|
| <b>UNIT-III</b> |                                                                               |   |     |    |
| 6)              | a. Explain store and forward packet switching                                 | 5 | CO3 | L3 |
|                 | b. Difference between Broadcasting and Multi casting                          | 5 | CO3 | L2 |
| <b>OR</b>       |                                                                               |   |     |    |
| 7)              | a. Explain token bucket algorithm with neat diagram                           | 5 | CO3 | L3 |
|                 | b. Explain different types of routing algorithms                              | 5 | CO3 | L3 |
| <b>UNIT-IV</b>  |                                                                               |   |     |    |
| 8)              | a. Enumerate the mechanism of three-way handshake protocol for TCP            | 5 | CO4 | L4 |
|                 | b. Explain the function of TCP/IP protocol                                    | 5 | CO4 | L3 |
| <b>OR</b>       |                                                                               |   |     |    |
| 9)              | a. Explain about elements of transport protocols                              | 5 | CO4 | L3 |
|                 | b. Show the different approaches in Packet Switching. Explain them in detail. | 5 | CO4 | L2 |
| <b>UNIT-V</b>   |                                                                               |   |     |    |
| 10)             | a. Explain in detail about function and structure of e-mail protocol          | 5 | CO5 | L3 |
|                 | b. Write briefly about World wide web                                         | 5 | CO5 | L2 |
| <b>OR</b>       |                                                                               |   |     |    |
| 11)             | a. Explain about Application layer and its services in detail?                | 5 | CO5 | L3 |
|                 | b. Explain the working of Electronic mail                                     | 5 | CO5 | L2 |

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## Previous Question Papers

**R18**

Code No: 154CG  
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD  
B.Tech II Year II Semester Examinations, August/September - 2022  
**COMPUTER NETWORKS**  
(Common to CSE(CS), CSE(N))

Time: 3 Hours Max.Marks:75

Answer any five questions  
All questions carry equal marks  
---

1.a) Compare and contrast the OSI and TCP/IP reference models.  
b) Explain the functions of the following network hardware devices:  
i) Hub ii) Bridge iii) Router iv) Gateway [7+8]

2.a) Explain about various transmission media in physical layer with a neat sketch.  
b) Write any four reasons for using layered protocols. [10+5]

3.a) What are the different types of error detection methods? Explain the CRC error detection technique using generator polynomial  $x^4 + x^3 + 1$  and data 11100011.  
b) What are the functions of medium access sub layers? Explain. [10+5]

4.a) What is the purpose of CSMA CD? Explain.  
b) Elaborate on the design issues of data link layer. [8+7]

5.a) Describe Dijkstra shortest path algorithm. Also show working of Dijkstra algorithm with the help of an example.  
b) Describe congestion control in datagram subnets. [10+5]

6.a) What is classful addressing? Discuss class A, class B, class C, class D, class E address with its range in decimal dotted notation and example.  
b) Elucidate the special IP addresses used in internet. [10+5]

7.a) Discuss the elements of Transport layer protocol.  
b) Explain the types of Transport layer Services. [10+5]

8.a) Describe DNS with diagrams and real-time examples.  
b) What are the three elements of SNMP? Explain. [10+5]

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Code No: 154CG

**R18**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech II Year II Semester Examinations, April/May - 2023**

**COMPUTER NETWORKS**

**(Common to CSE(CS), CSE(N))**

**Time: 3 Hours**

**Max. Marks: 75**

- Note:** i) Question paper consists of Part A, Part B.  
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.  
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART – A**

**(25 Marks)**

- 1.a) What is internet? [2]
- b) Write a brief note on ARPANET. [3]
- c) What is the purpose of using sliding window protocol? [2]
- d) List the three types of requests for the noisy channels. [3]
- e) What is shortest path routing? [2]
- f) Differentiate between connection oriented and connectionless network services. [3]
- g) What is multiplexing? [2]
- h) What is the functionality of transport Layer? [3]
- i) State the functions of application layer. [2]
- j) List the protocols of application layer. [3]

**PART – B**

**(50 Marks)**

- 2.a) Explain the functioning of various layers in TCP/IP reference model. [5+5]
- b) Give a brief overview on guided transmission media. [5+5]

**OR**

3. Explain the following: [5+5]
  - a) Network software
  - b) Wireless transmission.

- 4.a) Describe the features of the ALOHA protocol. [5+5]
- b) Compare i-persistent, non-persistent and p-persistent CSMA. [5+5]

**OR**

- 5.a) Explain bit-map and binary countdown collision free protocols. [5+5]
- b) Classify and explain about framing in data link layer. [5+5]

- 6.a) With an example, explain reverse path routing. [5+5]
- b) Write short notes on the network layer in the internet. [5+5]

**OR**

- 7.a) Compare multicasting with broadcasting. [5+5]
- b) Explain in detail about hierarchical routing. [5+5]

8. Write a detailed summary on TCP and UDP protocols. [10]

**OR**

9. State and explain the elements of transport protocols. [10]

10. Explain the following:

a) Domain name system

b) HTTP.

[5+5]

**OR**

11.a) Describe the components of electronic mail system.

b) Differentiate between WWW and Internet.

[5+5]

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SMU H Used papers 2023



**Code No: 125DT****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, May - 2018****COMPUTER NETWORKS****(Common to CSE, IT)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A****(25 Marks)**

- 1.a) What is Internet. Differentiate it from intranet. [2]
- b) Discuss the design issues of data link layer. [3]
- c) When do we use hubs? [2]
- d) What are main functionalities of routers? What is purpose of using multiprotocol routers? [3]
- e) What is optimality principle? [2]
- f) Discuss congestion control algorithms on brief. [3]
- g) What is CIDR addressing [2]
- h) Discuss the principles of internetworking. [3]
- i) What is silly window syndrome? [2]
- j) Draw TCP and UDP headers. [3]

**PART - B****(50 Marks)**

2. Compare and contrast OSI and TCP/IP reference models. Critique on each model. [10]

**OR**

- 3.a) Explain sliding window protocol.  
b) Describe go back N protocol. [5+5]

4. Define collision. Explain collision free protocols. Mention advantage of each protocol. [10]

**OR**

5. Explain the following:  
a) Bridges  
b) Gateways  
c) Repeaters. [10]

- 6.a) The major problem with distance vector routing algorithm is 'count to infinity'. How exchange complete path from router to destination instead of delay, helps in solving count to infinity problem.  
b) Explain the design issues of network layer. [5+5]

**OR**

7. Discuss the hierarchical routing with examples. [10]

8. Given a network address of 192.168.100.0 and a subnet mask of 255.255.255.192.  
a) How many subnets are created?  
b) How many hosts are there per subnet? [5+5]
- OR**
- 9.a) Discuss ICMP Messages.  
b) Explain Tunneling in Internet layer. [5+5]
10. Illustrate the TCP connections, TCP releases with state transition diagram. [10]
- OR**
11. Describe DNS with diagrams and real-time examples. [10]

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**Code No: 125DT****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, November/December - 2017****COMPUTER NETWORKS****(Common to CSE, IT)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A****(25 Marks)**

- 1.a) Write the advantages of optical fiber over twisted-pair and coaxial cables. [2]
- b) What are the advantages of having layered architecture? [3]
- c) Briefly explain the difference between switch and router. [2]
- d) Sketch the Manchester encoding for the bit stream: 0001110101. [3]
- e) Give the advantages of hierarchical routing. [2]
- f) Differences between CO and CL. [3]
- g) Explain DHCP. [2]
- h) What are the functions of ICMP? [3]
- i) What is the architecture of WWW? [2]
- j) Explain the differences between POP3 and IMAP. [3]

**PART - B****(50 Marks)**

- 2.a) Compare and contrast the OSI and TCP/IP reference models.
- b) What are the different types of error detection methods? Explain the CRC error detection technique using generator polynomial  $x^4+x^3+1$  and data 11100011. [5+5]

**OR**

- 3.a) Discuss about the various transmission media available at the physical layer.
  - b) Explain about GBN Sliding Window Protocol. [5+5]
- 4.a) Explain the differences between the switching methods.
  - b) Elucidate the CSMA schemes. [5+5]

**OR**

- 5.a) Illustrate the frame structure of IEEE 802.3.
  - b) Give a detail note on the ALOHA protocols. [5+5]
- 6.a) Elucidate Distance Vector Routing Algorithm with example.
  - b) Describe the problem and solutions associated with distance vector routing. [5+5]

**OR**

- 7.a) Explain the general principles of congestion control.
- b) Describe congestion control in datagram subnets. [5+5]

- 8.a) Elucidate the special IP addresses used in internet.  
b) Discuss the significance and the operation of NAT. [5+5]

**OR**

- 9.a) Illustrate the connection establishment and release in transport layer.  
b) How crash recovery is managed at the transport layer? [5+5]

- 10.a) Explain Real-time transport protocol.  
b) When user clicks a hyperlink, what are the steps that occur between the user's click and the page being displayed? [5+5]

**OR**

11. Write short notes on the following: [10]  
(a) MIME (b) Audio compression (c) DNS (d) Voice over IP.

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**Code No: 125DT****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, November/December - 2017****COMPUTER NETWORKS****(Common to CSE, IT)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

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- b) What are the advantages of having layered architecture? [3]
- c) Briefly explain the difference between switch and router. [2]
- d) Sketch the Manchester encoding for the bit stream: 0001110101. [3]
- e) Give the advantages of hierarchical routing. [2]
- f) Differences between CO and CL. [3]
- g) Explain DHCP. [2]
- h) What are the functions of ICMP? [3]
- i) What is the architecture of WWW? [2]
- j) Explain the differences between POP3 and IMAP. [3]

**PART - B****(50 Marks)**

- 2.a) Compare and contrast the OSI and TCP/IP reference models.
- b) What are the different types of error detection methods? Explain the CRC error detection technique using generator polynomial  $x^4+x^3+1$  and data 11100011. [5+5]

**OR**

- 3.a) Discuss about the various transmission media available at the physical layer.
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- 4.a) Explain the differences between the switching methods.
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